REQUEST FOR RECONSIDERATION

Applicants wish to thank Examiner Peng for the courtesies extended to Applicants' Representative at the interview held on January 27, 2006, and for the follow-up discussions with the Examiner. At that time, Applicants' Representative discussed the compositional and structural differences between the surface modified inorganic oxide powder of the claimed invention and the powders disclosed in the cited references of record, and why these differences would not have been obvious by the disclosures of the references. The rejections of the claims for indefiniteness were also discussed, as well as the above-amendments for overcoming the rejections. The following remarks further expand upon the discussion with the Examiner.

Rejections under 35 U.S.C. §§ 102 and 103

The rejections under 35 U.S.C. § 102(b) of claims 1-4 and 7-10 as anticipated by Kobayashi et al. (U.S. Patent No. 4,849,022), claims 1-3 and 7-10 as anticipated by Shibasaki et al. (U.S. Patent No. 5,543,525), claims 1-4 and 7-10 as anticipated by JP 05-139726, claims 1-3 and 8-9 as anticipated by JP 63-043976, and claims 1-4 and 7-9 as anticipated by JP 10-316406, are respectfully traversed. The rejections under 35 U.S.C. § 103(a) of claims 4-6 over Shibasaki et al. in view of Kobayashi et al., and of claims 4-6 over JP 05-139726 in view of Kobayashi et al. are also respectfully traversed.

The references do not describe or suggest a surface modified inorganic oxide powder, having an amount of residual volatile organic components less than 30 ppm, as presented in amended claim 1. In particular, the references do not indicate that the volatile organic components on a powder surface are removed by:

applying an initial heat treatment at from higher than 200° C to lower than 400° C at the time of the surface treatment, and then a heat treatment at from higher than 150° C to

lower than 400° C, such that the amount of residual volatile organic components is less than 30 ppm.

The Kobayashi et al. reference generally describes a treatment method of silica powder using two types of organosilicon compounds. The objective of this reference is to make a high degree surface treated powder having high thixotropy when mixing with organopolysiloxane and an excellent storage stability. In order to achieve this objective, two kinds of organosilicon compounds are used together for surface treatment of the powder. Moreover, the treating method in the Kobayashi et al. reference is carried out in initially at only "0 to 200° C" in air or inert gas atmosphere for at least 15 minutes (see, e.g., column 3, lines 50-63, emphasis added), in which there is no suggestion of increasing this initial heat treating step to higher than 200° C. Therefore, there is no evidence that the claimed low amount of residual organic components is achieved.

Further, in the Kobayashi et al reference, the surface treatment is carried out at low temperature (0-200° C) at first and then, at higher temperature (80-350° C). These treatments are carried out in air or nitrogen atmosphere. In these treatments, the treatments, the treating compounds are adhered or adsorbed on the powder surface at low temperature. In these treatments, there is no suggestion to remove the volatile components on the powder surface. On the other hand, in the present application, the surface treatment is carried out at a high temperature, and then, at a relatively low temperature (150-400° C) in flowing nitrogen to remove volatile components. By using flowing nitrogen at a relatively low temperature, the volatile components can be removed effectively. Regarding Shibasaki et. al., the reference generally describes a treatment process of silica powder using organopolysiloxanes. The objective is to make an enough surface treated powder, having a strong chemical bond between the particle and polysiloxane molecules, and improving the surface modifying effect against the elapse of time. In order to achieve this objective, two kinds of organosilicon

compounds, i.e., an "organopolysiloxane" and an alkylsilane compound (a "silane coupling agent"), are used. (See, e.g., column 2, lines 19-27). Further, the heat treating process is divided into two steps, i.e., a first step is treatment at "70° C or more for 0.1 to 5 hours", with an alkylsilane and solvent. (See, e.g., column 3, lines 24-37). In the second step, the treatment is with organosiloxane and a solvent at "70° C or more for 0.1 to 5 hours." (See, e.g., column 3, line 66 through column 4, line 2). However, there is no specific or required recitation that residual volatile organic components are removed to <u>less than 30 ppm</u>. Moreover, Applicants note that the reference contains several examples (i.e., Examples 1-6) that exemplify the two steps of the heating process; however, none of the combined steps exemplify the specific heat treatment combination presently claimed. Therefore, there is nothing in the reference that shows that the claimed amount of residual organic components is achieved.

Regarding JP 05-139726, the reference describes heat treating alumina powder with a silane compound, diluted with an amine catalyst, at "100° C to 300° C". (See abstract). However, there is no description of any second step in the treatment process. Therefore, there is no evidence or suggestion that the claimed amount of residual organic components can be achieved.

Regarding JP JP 63-043976, the reference describes surface treated filler with a "long-chain alkylalkoxysilane" and solvent. (See abstract). However, it appears that the heat treatment is only at 110 to 200 ° C (see page 4 of the reference), and there is no indication of a second heating step. Therefore, there is no evidence or suggestion that the claimed amount of residual organic components can be achieved.

Regarding JP 10-316406, the reference describes surface treatment of various oxide particles with a silane compound and an organic solvent. However, the heat treatment is only "at above room temperature", or preferably at "50° C to 250° C". (See abstract). Therefore,

there is no evidence or suggestion that the claimed amount of residual organic components can be achieved.

In contrast to the references, in the present invention, the removal (heat treating) process of the volatile components is a significant aspect of the invention. For instance, in the initial heat treatment step, if the temperature is too low, the removing efficiency is low such that the product is unsuitable for use, e.g., "the bonding reaction is . . . insufficient". (See present specification at pages 13-14, paragraph [0019]). Moreover, if the temperature is higher than the decomposition temperature of the organic treating compounds, i.e., higher than 400° C, the decomposed components deteriorate the product. (See present specification at pages 13-14, paragraph [0019], pages 14-15, paragraph [0021], and pages 15-16, paragraph [0023]). Further, the decomposed components may become volatile impurities if they have lower molecular size. Therefore, "[b]y carrying out the surface treatment and the . . . two stages [of] heat treatments, the residual volatile components . . . the surface modifying agent, and the decomposed substance or condensate of the solvents or agents, can be reduced to less than 30 ppm." (See present specification at page 19, paragraph [0022).

Therefore, since the disclosures of the references, alone or in combination, do not describe or suggest the claimed removal of volatile organic components, the claimed invention is novel and unobvious over the references.

Accordingly, Applicants respectfully request the withdrawal of the rejections under 35 U.S.C. §§ 102(b) and 103(a).

Rejections under 35 U.S.C. § 112, Second Paragraph

The rejections of claims 1 and 10 under 35 U.S.C. § 112, second paragraph are respectfully traversed.

The present Office Action indicates at page 3, paragraph 4, that the term "volatile" in the phrase "volatile organic components" is a relative term. However, Applicants submit that the term is defined by the present specification, which refers to "volatile" components, as solvents, "such as hexane, methanol, ether or the like." (Present specification at page 9, lines 13-16). Moreover, Applicants note that "volatile organic components" or compounds (VOCs), are generally known in the art as "any hydrocarbon, except methane or ethane, with vapor pressure equal to or greater than 0.1 mm Hg." (Hawley's CONDENSED CHEMICAL DICTIONARY, 13th ed., at page 1174; a copy of which is provided herewith for the Examiner's consideration).

The present Office Action also indicates at page 3, paragraph 4, that R^1, R^2, and R^3 in claim 10 are not defined. However, Applicants point out that R is generally defined in the claim as an alkyl group, in which R^1, R^2, and R^3 are each represented as alkyl groups having more than 6 carbons. In particular, the present specification recites that "at least one of <u>these alkyl groups</u> [i.e., R^1, R^2, and R^3] has more than 6 carbons." (See the present specification at page 9, lines 13-16) (Emphasis added).

The other rejections of claim 10 are obviated by amendment.

Accordingly, withdrawal of the rejections is requested.

The rejections of claims 4 and 7 under 35 U.S.C. § 112, second paragraph are obviated by amendment.

Accordingly, withdrawal of the rejection is requested.

Objections to the Specification

The objection to the Abstract in the present specification is obviated by amendment.

Accordingly, withdrawal of the objection is requested.

Applicants submit the application is now in condition for allowance. Early notification of such allowance is earnestly solicited.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.
Norman F. Oblon

Bryant L. Young
Registration No. 49,073

Customer Number
22850

Tel: (703) 413-3000
Fax: (703) 413 -2220
(OSMMN 06/04)

Hawley's

Condensed Chemical

Dictionary

THIRTEENTH EDITION

Revised by

Richard J. Lewis, Sr.

VNR

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"Vitrafos" *[Stauffer].* TM for a clear, glassy, granular sodium phosphate.
Properties: Phosphorus pentoxide, 63% min; sieve size 10- to 80-mesh screen; pH (1% solution) 7.8; bulk d 79 lb/cu ft.
Use: Detergent builder, deflocculating agent in oil-well drilling muds, sequestering agent in the textile industry.

vitreous. Descriptive of a material having the appearance and properties of a glass, i.e., a hard, amorphous, brittle structure, as in porcelain enamel.
See vitrification; glass.

vitreous enamel. See porcelain enamel.

"Vitrex" *[Atlas].* TM for an acid-proof silicate cement that sets by chemical action. Inert to acids, except hydrogen fluoride, up to 1148C.

vitrification. The process of converting a siliceous material into an amorphous, glassy form by melting and cooling. As applied to radioactive waste disposal, it refers to incorporation of the waste in glassy materials for permanent storage.

vitriol. An obsolete term once used to refer to a number of sulfates (lead, copper, zinc) because of their glassy appearances. Sulfuric acid was called oil of vitriol. Derived from *vitrum* (glass).

"Vitrobond" *[Atlas].* TM for a plasticized sulfur cement, resistant to nonoxidizing acids, oxidizing acids, acidic and neutral salts, up to 93C.

"Vitroplast" *[Atlas].* TM for a polyester resin cement, resistant to nonoxidizing acids, acidic and neutral salts, some organic solvents, and weak alkalies, up to 135C.

VM&P naphtha. See naphtha (la).

VOC. See volatile organic compound.

voids. Empty spaces of molecular dimensions occurring between closely packed solid particles, as in powder metallurgy. Their presence permits barriers made by powder metallurgy techniques to act as diffusion membranes for separation of uranium isotopes in the gaseous diffusion process.
See diffusion, gaseous.

Voight amination. Amination of benzoins with amines in the presence of phosphorus [illegible] hydrochloric acid.

"Volan" *[Du Pont].* (methacrylatochromic chloride) TM for bonding agent.
Use: Applied to glass fibers used in reinforced plastic laminates to improve adhesion between glass and resin.

volatile organic compound. (VOC). Any hydrocarbon, except methane and ethane, with vapor pressure equal to or greater than 0.1 mm Hg.

volatility. The tendency of a solid or liquid material to pass into the vapor state at a given temperature. Specifically the vapor pressure of a component divided by its mole fraction in the liquid or solid.

Volhard-Erdmann cyclization. Synthesis of alkyl and aryl thiophenes by cyclization of disodium succinate or other 1,4-difunctional compounds (γ-oxo acids, 1,4-diketones, chloroacetyl-substituted esters) with phosphorus heptasulfide.

Volhard's solution. A solution of potassium thiocyanate.
Use: Analytical chemistry.

voltaic cell. Two conductive metals of different potentials, in contact with an electrolyte, which generate an electric current. The original voltaic cell was composed of silver and zinc, with brine-moistened paper as electrolyte. Semisolid pastes are now used; electrodes may be lead, nickel, zinc, or cadmium.
See solar cell.

volumetric analysis. See titration.

Von Baeyer, Adolf. (1835–1917). A German chemist who received the Nobel prize for chemistry in 1905. His work concerned organic dyes and hydroaromatic compounds. He was educated in Berlin under the direction of Bunsen and Kekule. He was a professor in Strasbourg and Munich. Many discoveries included barbituric acid and the molecular structure of indigo.

Von Braun reaction. The reaction between phosphorous pentahalide and an *N*-substituted benzamide to give an alkylene dihalide and benzonitrile.

von Richter reaction. Carboxylation of substituted aromatic nitro compounds with ethanolic potassium cyanide at 120-270C, the carboxyl group entering a position ortho to that previously occupied by the eliminated nitro group.

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